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Charles W. Stewart
Date: December 18, 2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

In re application of	)	
	)	
STEVEN P. GILES, ALEX F. WOLDHUIS, MARINUS M. W. J. MIGGELBRINK, JAMES A. SALTER, and CHARLES P. BRUNDRETT	)	
	)	
Serial No. 10/091,239	)	Group Art Unit: 1724
	)	
Filed March 5, 2002	)	Examiner: Minh-Chau T. Pham
	)	
PROCESS FOR TRAPPING PARTICULATE MATTER IN HOT GAS AND TRAP THEREFOR	)	December 18, 2003
	)	

COMMISSIONER FOR PATENTS
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPELLANT'S BRIEF

Real Party in Interest

As the assignee of the captioned application, Shell Oil Company is the real party in interest in this appeal.

Related Appeals and Interferences

There are no other appeals or interferences known to Appellant that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims

Originally filed claims 1 - 10 are cancelled from the specification per the Amendment mailed September 5, 2003. Claims 11-26, which were added by the Amendment mailed September 5, 2003, are finally rejected pursuant to the Examiner's Action mailed October 23, 2003. Claims 11-26 are still pending in the application and are the subject of this appeal.

Status of Amendments

No amendment has been filed subsequent to the Examiner's Action finally rejecting claims 11-26 that was mailed October 23, 2003.

Summary of the Invention

The invention is directed to a process for treating a combustion gas stream. Page 1, lines 2-3; page 3, lines 15-28. In this process, the combustion gas stream, which comprises particulate matter, passes through a duct that is in fluid flow communication with combustion equipment. Page 3, lines 22-28. The duct defines a cross-section and is fitted with assembly means, which comprises a particulate trap and a sliding-gate housing. Page 4, lines 1-3. The assembly means provides for the placement of the particulate trap in the duct and for the removal of the particulate trap from the duct while the combustion equipment is online. Page 4, line 22-32. The combustion gas stream is further passed through the particulate trap to thereby remove the particulate matter from the combustion gas stream to provide a filtered gas stream. Page 2, lines 17-29; page 3, lines 15-19. The filtered gas stream is then passed over an environmental reactor catalyst bed contained in the duct downstream from the particulate trap to thereby provide a clean gas stream. Page 5, lines12-18. The clean gas stream is then passed to a stack for release to the atmosphere. Page 3, lines 24-28.

Issu s

1. Whether claims 11 and 16 are unpatentable under 35 U.S.C. 103 over Wright (U.S. 5,547,495).

2. Whether claims 12-15 and 17-26 are unpatentable under 35 U.S.C. 103 over Wright (U.S. 5,547,495) in view of Peter et al. (U.S. 6,063,150).

Grouping of Claims

The claims do not stand or fall together.

Argument

1. The § 103 Rejection of Claims 11 and 16.

A. The Wright patent (U.S. 5,547,495)

Contrary to the Examiner's characterization of the disclosure by the Wright patent, it fails to disclose the placement of a removable particulate trap assembly within an exhaust gas duct located upstream of a catalyst bed.

In the background presented by the Wright patent a discussion is presented of prior art "slipstream systems" used in flue gas treatment systems. *See* column 1, lines 60-63. These slipstream systems pass a small portion of a flue gas, called a slipsteam, through a precipitator to remove particulates therefrom prior to passing the slipstream across a bed of catalyst for converting the sulfur dioxide to sulfur trioxide. *See* column 2, lines 4-18, 34-45, and 52-56. The sulfur trioxide can function as a conditioning agent for reducing the fly ash resistivity and to increase precipitator efficiency. *See* column 1, lines 39-68. The slipstream is then returned to the duct. *See* column 1, lines 60-66; column 2, lines 14-18 and 39-41.

Wright states that all its known proposed slipstream systems use only a relatively small slipstream. *See e. g.*, column 3, lines 18-49. Thus, Wright does not recognize the passing of the entire flue gas stream through a precipitator prior to passing the entire precipitator treated stream through a catalyst bed. Moreover, when Wright notes the other numerous disadvantages and deficiencies of the prior art slipstream systems, it suggests that the

processing of a small slipstream is responsible for the difficulty in the system achieving high efficiency catalytic conversion. *See* column 3, lines 37-48.

The Wright invention is specifically directed to the treatment of a boiler flue gas prior to passing it to an electrostatic precipitator so as to generate sulfur trioxide conditioning agent that provides for the enhancement of the electostatic removal of particulate matter in the flue gas. See column 5, lines 40-45; column 6, line 66 – column 7, line 22; and Fig. 1. Wright does not teach the catalytic treatment of the flue gas after passing it through a precipitator.

B. Argument

The Wright patent does not disclose or teach the placement within a combustion gas duct a particulate trap upstream from an environmental reactor catalyst bed. Moreover, Wright does not even recognize Appellants' problem of catalyst fouling and deactivation caused by the presence of particulate matter contained in a combustion gas stream. Instead, Wright is directed toward the resolution of problems associated with the use of slipstream systems for converting sulfur dioxide to sulfur trioxide conditioning agent so as to enhance the removal in a downstream precipitator of particulate matter entrained in a flue gas.

In a sense, the Wright patent teaches against Appellants' claimed invention in that, if the relationship between the sulfur dioxide conversion catalyst and the precipitator of the Wright process or apparatus were to be reversed, with the precipitator being placed in the combustion gas duct upstream from the catalyst, then the Wright invention would not work. The switching of the two elements would destroy the benefit desired from the use of the catalyst for converting the sulfur dioxide to sulfur trioxide conditioning agent would be lost.

Concerning Appellants' claim 16, the Wright patent does not disclose the adaptation of a sliding gate valve by the removal therefrom and replacement therewith a particulate trap as recited in claim 16 and described in detail at page 4, lines 1-10 of Appellants' specification.

Considering the above comments, Appellants respectfully assert that claims 11 and 16 are patentable over the Wright patent.

2. The § 103 Rejection of Claims 12-15 and 17-26.

A. The Wright Patent (U.S. 5,547,495)

The Wright patent is discussed above.

B. The Peter et al. patent (U.S. 6,063,150)

The Peter et al patent discloses a self-cleaning particle filter for removing particulates from the exhaust of internal combustion engines. See column 1, lines 10-16. The self-cleaning filter has four members one of which is a filter sandwich which includes a first sheet of inorganic fiber filter material to which is sewn a sheet of inorganic fiber filter material. *See e.g.*, column 2, lines 20-41. A second sheet of inorganic fiber filter material is affixed to the first sheet of fiber material. *Supra.* Additional layers of inorganic fiber material can be provided on the filter sandwhich. *Supra.* The figures of the Peter et al. patent demonstrate that the self-cleaning particle filter is an apparatus that is interposed in an exhaust line of an internal combustion engine.

C. Argument

The combination of the references, when considered together, does not disclose or teach each and every limitation of Appellants' invention of claims 12-15 and 17-26. As noted above, Wright only discloses the placement of catalyst bed upstream from a precipitator that provides for the function of particulate removal, but which is not a filtering device. Moreover, there is absolutely no suggestion in the references that they can be combined in the manner presented by the Examiner.

The Examiner argues that the references may be combined in such a way that the filtering layers disclosed by Peter et al. is substituted for the filtering apparatus of Wright. The problem with this suggestion is that there is no filtering apparatus disclosed in the Wright patent. It is presumed that the Examiner is referring to the assembly device of Wright, which includes a catalytic conversion means. There is no way one skilled in the art would be led to replace the catalytic conversion means of the Wright patent with a filtering apparatus; since, this would defeat the very purpose of the invention as taught by Wright.

Another problem with the substitution suggested by the Examiner is that the self-cleaning filter taught by Peter et al. is not removable during the operation of the engine to which it is fluidly connected. On the other hand, Appellants' claimed invention uses assembly means that includes a particulate trap that provides for the placement and removal of the particulate trap from the duct during the operation of the combustion equipment to which the duct is connected. *See* Appellants' claim 11.

Another difference is that the self-cleaning filter of the Peter et al. patent is not a part of an assembly that includes a sliding-gate housing. *See* Appellants' claim 11. Nor does the Peter et al. self-cleaning filter comprise a gate valve having a sliding gate that has been removed therefrom and replaced with a particulate trap. *See* Appellants' claims 16 and 26.

The Peter et al. patent does not disclose a filter structure that includes a filter layer for capturing small particles sandwiched between two filter layers for capturing large particles. *See* Appellants' claims 13, 18, and 23.

Nor do Peter et al. show that such a filter structure is made of sintered weave material, *See* Appellants' claims 14, 19, and 24, nor of pleated filtering material. *See* Appellants' claims 15, 20, and 25.

Peter et al. do not teach the cleaning of a particulate trap by spraying a cleaning media thereon. *See* Appellants' claim 21.

Considering the above comments, Appellants respectfully assert that claims 12-15 and 17-26 are patentable over the combination of Wright and Peter et al. patents.

Conclusion

In view of the above, Appellants respectfully ask the Board to reverse the Examiner's final rejection of claims 11-26.

Respectfully submitted,

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APPENDIX

THE CLAIMS ON APPEAL ARE CLAIMS 11-26.

11. A process for treating a combustion gas stream, said process comprises:

passing said combustion gas stream, which comprises particulate matter, through a duct that is in fluid flow communication with a combustion equipment, wherein said duct defines a cross-section and is fitted with assembly means, wherein said assembly means comprises a particulate trap and a sliding-gate housing, wherein said assembly means provides for the placement of said particulate trap in said duct and the removal of said particulate trap from said duct while said combustion equipment is online;

passing said combustion gas stream through said particulate trap to thereby remove said particulate matter from said combustion gas stream to provide a filtered gas stream;

passing said filtered gas stream over an environmental reactor catalyst bed contained in said duct downstream from said particulate trap to thereby provide a clean gas stream; and

passing said clean gas stream to a stack for release.

12. A process as recited in claim 11, wherein said particulate trap further comprises:

a plurality of filtering layers, each layer having a mesh size, contained in a housing to provide a predetermined shape.

13. A process as recited in claim 12, wherein said plurality of filtering layers includes two filtering layers having a first media to catch larger particles, wherein said plurality of filtering layers further includes one filtering layer having a second media to catch smaller particles, and wherein said one filtering layer having said second media is sandwiched between said two filtering layers having said first media.

14. A process as recited in claim 13, wherein each filtering layer of said plurality of filtering layers is a sintered weave material.

15. A process as recited in claim 14, wherein each filtering layer of said plurality of filtering layers is a pleated filtering layer.

16. A process as recited in claim 11, wherein said assembly means comprises a sliding-gate value having a sliding gate that has been removed therefrom and replaced therewith said particulate trap.

17. A process as recited in claim 11, wherein said particulate trap further comprises:

a plurality of filtering layers, each layer having a mesh size, contained in a housing to provide a predetermined shape.

18. A process as recited in claim 17, wherein said plurality of filtering layers includes two filtering layers having a first media to catch larger particles, wherein said plurality of filtering layers further includes one filtering layer having a second media to catch smaller particles, and wherein said one filtering layer having said second media is sandwiched between said two filtering layers having said first media.

19. A process as recited in claim 18, wherein each filtering layer of said plurality of filtering layers is a sintered weave material.

20. A process as recited in claim 19, wherein each filtering layer of said plurality of filtering layers is a pleated filtering layer.

21. A process as recited in claim 11, further comprising:

cleaning said particulate trap while in place is said duct by spraying a cleaning media upon said particulate trap.

22. A process as recited in claim 21, wherein said particulate trap further comprises:

a plurality of filtering layers, each layer having a mesh size, contained in a housing to provide a predetermined shape.

23. A process as recited in claim 22, wherein said plurality of filtering layers includes two filtering layers having a first media to catch larger particles, wherein said plurality of filtering layers further includes one filtering layer having a second media to catch smaller particles, and wherein said one filtering layer having said second media is sandwiched between said two filtering layers having said first media.

24. A process as recited in claim 23, wherein each filtering layer of said plurality of filtering layers is a sintered weave material.

25. A process as recited in claim 24, wherein each filtering layer of said plurality of filtering layers is a pleated filtering layer.

26. A process as recited in claim 25, wherein said assembly means comprises a sliding-gate value having a sliding gate that has been removed therefrom and replaced therewith said particulate trap.